REMARKS/ARGUMENTS

Reconsideration and continued examination of the above-identified application are respectfully requested.

By way of this amendment, all independent claims have been amended to recite that the maximum width from all of the edges for each window element is calculated or obtained. New claim 22 further recites that a separate maximum width for each window element is obtained. Claim 23 recites that the overall maximum width from all of the separately determined maximum widths is obtained. Support for this amendment can be found throughout the present application, including page 7, line 23 to page 8, line 2; page 8, lines 16-25; and page 9, lines 8-15, as well as the Figures, including Figures 6 and 7. Accordingly, no questions of new matter should arise and entry of this amendment is respectfully requested.

Rejection of claims 1, 4, 5, and 13 under 35 U.S.C. §103(a) -- Yamagata in view of Tsuchiya et al. and Chatterjee

At page 3, item 2 of the Office Action, the Examiner rejects claims 1, 4, 5, and 13 under 35 U.S.C. §103(a) as being unpatentable over Yamagata (U.S. Patent No. 6,021,222), in view of Tsuchiya et al. (U.S. Patent No. 5,475,766), and Chatterjee (U.S. Patent No. 5,701,179). The Examiner has essentially repeated the same grounds for the rejection as in the previous Office Action of May 9, 2008, but now further relies on the Chatterjee reference. The Examiner asserts that Chatterjee reads on an edge window that has a height that is equal to a plurality of window elements. This rejection is respectfully traversed.

Besides the previous arguments presented to the Examiner, none of the cited art relied upon by the Examiner, individually or combined, teaches or suggests the present invention, which further relates to a measurement based on the edge information in each of the window elements, wherein

the maximum width between the edges in the height direction from each of the window elements is obtained, determined, or calculated. Further, as recited in new claims 22 and 23, separate maximum widths can be individually obtained for each of the window elements and the overall maximum width from the separately measured maximum widths of the edges can be obtained.

As explained throughout the present application, previous processes for detecting edge positions had the problem of either setting edge windows that were too broad or too narrow in order to detect the position distant from the end of the workpiece. As shown, for instance, in Figure 13A, while a narrow edge window was set in an attempt to overcome variations in the image pickup position of the workpiece, a further problem occurred as shown in Figure 13B, wherein due to such narrow edge windows, the workpiece shape, such as one having an acute angle could deviate from the edge window and, therefore, the maximum width would be mis-interpreted, improperly calculated, or simply missed. With the present invention, each of the edges for each window element provides a calculation with regard to understanding the maximum width from all of the edges of the window elements. This simply is not achieved with the cited references, nor would the cited references understand this problem, nor would the cited references provide a solution to this problem.

In particular, Yamagata relates to a pattern recognition technology which tries to detect edges in an image to recognize an outline of an object based on the edge information. In particular, the window technology in Yamagata is used for pattern recognition by recognizing edges in the window and is not a technology which performs the measurement based on the position between edges, as mentioned in the present invention, using edge positions detected in the window.

Tsuchiya et al. relates to a pattern inspection device as well, and particularly relates to the detection of corners included in the pattern. More specifically, as shown in Figs. 3a and 3b, the

window is arranged in the vicinity of corners, and rounding in the window is recognized and inspected. Like Yamagata, the window technology is used for pattern recognition and inspection by recognizing edges in the window, and Tsuchiya et al. does not perform any measurement based on the position between edges by using edge positions detected in windows as in the present invention.

Chatterjee measures the shape of the edge portion, like Yamagata, and is used for pattern recognition or inspection by recognizing edges in the window. Chatterjee does not perform any measurement based on the position of edges by using the edge positions detected in the windows, as in the present invention.

Further, in each of these cited references, as indicated above, none of the references teach or suggest the claimed invention, including the ability to calculate the maximum width between the edges in the height direction for each window element.

Yamagata also fails to teach or suggest an apparatus having _user selected_ parameters. There would be no reason, nor would it be feasible, to modify the detection system of Yamagata to further allow for user involvement as proposed by the Examiner. Yamagata is not concerned with user involvement whatsoever, because Yamagata relies on a Sobel operator to determine areas A, B, and C. _See,_ column 7, line 60 through column 8, line 13. To modify Yamagata to further include user interaction would require a drastic overhaul of the system, for no apparent reason.

With respect to the newly-cited reference of Chatterjee, the Examiner is primarily relying on Fig. 8 of this reference to assert that an edge window is shown, which is set by the edge window setting unit so as to have a height that is equal to the height of each of the plurality of window elements. The Examiner, without explanation, concludes that it would be obvious to have this aspect in Yamagata, but does not explain at all why it would be obvious or why one skilled in the art would be motivated to include this aspect in Yamagata. Chatterjee strictly relates to a measurement

method to determine the dimensions of an edge of a part, wherein the method requires acquiring a 3D image of a tool using Moiré interferometry. This method or technique does not have any similarities to Yamagata, which strictly relates to transforming an image into digital data wherein an image is being scanned and not an actual three-dimensional tool. Further, the whole purpose of Yamagata is to detect a predetermined sized circle in an image being scanned, which is quite different from the purpose and method of Chatterjee as mentioned above. Therefore, one skilled in the art would have no motivation to first look to Chatterjee for any modification of Yamagata due to the different purpose, the different method involved, the problem being solved, and what is being measured in the measuring technique.

Accordingly, for these reasons, this rejection should be withdrawn.

Rejection of claims 2, 3, 6, and 7-11 under 35 U.S.C. §103(a) – Yamagata, in view of Tsuchiya et al., Chatterjee, and further in view of Lopez et al.

At page 5, item 3 of the Office Action, the Examiner rejects claims 2, 3, 6, and 7-11 under 35 U.S.C. §103(a) as being unpatentable over Yamagata, in view of Tsuchiya et al., Chatterjee, and further in view of Lopez et al. (U.S. Patent No. 6,148,117). This rejection is respectfully traversed.

The comments regarding Yamagata, Tsuchiya et al., and Chatterjee, as set forth above, apply equally here.

With respect to Lopez et al., Lopez et al. does not involve setting an edge window, setting a plurality of window elements in the edge window, and performing the measurement based on the positions of edges detected in the window elements, as in the present invention.

Accordingly, for these reasons, this rejection should be withdrawn.

Rejection of claim 14 under 35 U.S.C. §103(a) -- Yamagata in view of Tsuchiya et al., Chatterjee, and further in view of Kobayasi et al.

At page 7, item 4 of the Office Action, the Examiner rejects claim 14 under 35 U.S.C. §103(a) as being unpatentable over Yamagata, in view of Tsuchiya et al., Chatterjee, and further in view of Kobayasi et al. (U.S. Patent No. 5,136,661). This rejection is respectfully traversed.

The comments regarding Yamagata, Tsuchiya et al., and Chatterjee, as set forth above, apply equally here.

With respect to Kobayasi et al., Kobayashi et al. relates to position recognition and does not relate to setting an edge window, setting a plurality of window elements in the edge window, and performing the measurements based on the positions of the edges detected in each of the window elements, as in the present invention.

Accordingly, for these reasons, this rejection should be withdrawn.

Rejection of claims 15-18 under 35 U.S.C. §103(a) -- Yamagata in view of Tsuchiya et al., Chatterjee, and Lopez et al.

At page 8, item 5 of the Office Action, the Examiner rejects claims 15-18 under 35 U.S.C. §103(a) as being unpatentable over Yamagata, in view of Tsuchiya et al., Chatterjee, and Lopez et al. This rejection is respectfully traversed.

The comments regarding Yamagata, Tsuchiya et al., and Chatterjee, as set forth above, apply equally here.

With respect to Lopez et al., Lopez et al. does not involve setting an edge window, setting a plurality of window elements in the edge window, and performing the measurement based on the positions of the edges detected in the window elements, as in the present invention.

Accordingly, for these reasons, this rejection should be withdrawn.

Rejection of claim 19 under 35 U.S.C. §103(a) -- Yamagata in view of Tsuchiya et al., Chatterjee, Lopez et al., and further in view of Kobayasi et al.

At page 8, item 6 of the Office Action, the Examiner rejects claim 19 under 35 U.S.C. 103(a) as being unpatentable over Yamagata, in view of Tsuchiya et al., Chatterjee, Lopez et al., and further in view of Kobayasi et al. This rejection is respectfully traversed.

The comments regarding Yamagata, Tsuchiya et al., and Chatterjee, as set forth above, apply equally here.

With respect to Lopez et al. and Kobayasi et al., these cited references do not involve setting an edge window, setting a plurality of window elements in the edge window, and performing the measurement based on the positions of the edges detected in the window elements, as in the present invention.

Accordingly, this rejection should be withdrawn.

Rejection of claims 1, 4, 5, and 13 under 35 U.S.C. §103(a) -- Yamagata in view of Chatterjee

At page 9, item 7 of the Office Action, the Examiner rejects claims 1, 4, 5, and 13 under 35 U.S.C. 103(a) as being unpatentable over Yamagata in view of Chatterjee. This rejection is respectfully traversed.

For the reasons set forth above with respect to Yamagata and Chatterjee, this rejection should be withdrawn.

Accordingly, this rejection should be withdrawn.

Rejection of claims 20 and 21 under 35 U.S.C. §103(a) -- Yamagata in view of Shimazaki et al. and Do

At page 10, item 8 of the Office Action, the Examiner rejects claims 20 and 21 under 35

U.S.C. 103(a) as being unpatentable over Yamagata, in view of Shimazaki et al. (U.S. Patent No. 5,058,176), and Do (U.S. Patent No. 6,941,007 B1). This rejection is respectfully traversed.

The comments regarding Yamagata apply equally here.

With respect to Shimazaki et al., the Examiner pointed out that there is a description about a window in col. 2, lines 40-47 of Shimazaki et al. However, in col. 2, lines 2-5, the level of the window is for brightness and the width of the window is for gradation, which is totally different from the definitions of the window element and edge window of the present invention.

With respect to Do, Do relates to pattern recognition and recognizing the distance between the coordinates of elements detected in each of the windows, as in Fig. 9E, as pointed out by the Examiner. The image selection process in Do does not set an edge window, set a plurality of window elements in the edge window, and perform the measurement based on the positions of the edges detected in each of the window elements, as in the present invention.

Further, with respect to Do, a pattern inspection apparatus and method are mentioned, which is used to detect defects in an object being inspected. Do primarily relates to the inspection of wafers as shown, for instance, in Fig. 2 of Do. In Do, a 3D article is being inspected and this involves a pattern recognition technique, wherein multiple images of the object being inspected are obtained. Again, this is quite different from the primary reference of Yamagata, which is detecting a circled image for pattern recognition on a 2D piece of data. This is further confirmed at col. 17, beginning at line 27, which indicates the applications for the method and system of Yamagata, which involves the scanning of 2D data objects, such as maps and photographs. One skilled in the art would look to Do for any modification of Yamagata.
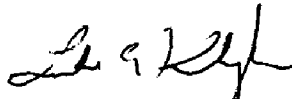
Accordingly, for these reasons, this rejection should be withdrawn.

U.S. Patent Application No. 10/689,755
Amendment dated April 9, 2009
Reply to Office Action of December 11, 2008

CONCLUSION

In view of the foregoing remarks, the applicant respectfully requests the reconsideration of

this application and the timely allowance of the pending claims.

If there are any other fees due in connection with the filing of this response, please charge

the fees to our Deposit Account No. 50-0925. If a fee is required for an extension of time under 37

C.F.R. § 1.136 not accounted for above, such extension is requested and should also be charged to

said Deposit Account.

Respectfully submitted,

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